

CLAIMS

We claim:

1. A targeting construct comprising:
 - (a) a first polynucleotide sequence homologous to at least a first portion of an FPR-RS4 gene;
 - (b) a second polynucleotide sequence homologous to at least a second portion of the FPR-RS4 gene; and
 - (c) a selectable marker.
2. A method of producing a targeting construct, the method comprising:
 - (a) providing a first polynucleotide sequence homologous to at least a first portion of an FPR-RS4 gene;
 - (b) providing a second polynucleotide sequence homologous to at least a second portion of the FPR-RS4 gene;
 - (c) providing a selectable marker; and
 - (d) inserting the first sequence, second sequence, and selectable marker into a vector to produce the targeting construct.
3. A cell comprising a disruption in an FPR-RS4 gene.
4. The cell of claim 3, wherein the cell is a murine cell.
5. The cell of claim 4, wherein the murine cell is an embryonic stem cell.
6. A non-human transgenic animal comprising a disruption in an FPR-RS4 gene.
7. The non-human transgenic animal of claim 6, wherein the transgenic animal is a mouse.
8. A cell derived from the transgenic mouse of claim 7.
9. A method of producing a transgenic mouse comprising a disruption in an FPR-RS4 gene, the method comprising:
 - (a) introducing the targeting construct of claim 1 into a cell;
 - (b) introducing the cell into a blastocyst;
 - (c) implanting the resulting blastocyst into a pseudopregnant mouse, wherein said pseudopregnant mouse gives birth to a chimeric mouse; and
 - (d) breeding the chimeric mouse to produce the transgenic mouse.

10. A method of identifying an agent that modulates the expression or function of an FPR-RS4 gene, the method comprising:
 - (a) providing a non-human transgenic animal comprising a disruption in an FPR-RS4 gene;
 - (b) administering an agent to the non-human transgenic animal; and
 - (c) determining whether the expression or function of the disrupted FPR-RS4 gene in the non-human transgenic animal is modulated.
11. A method of identifying an agent that modulates the expression or function of an FPR-RS4 gene, the method comprising:
 - (a) providing a cell comprising a disruption in an FPR-RS4 gene;
 - (b) contacting the cell with the agent; and
 - (c) determining whether the expression or function of the FPR-RS4 gene is modulated.
12. The method of claim 11, wherein the cell is derived from the non-human transgenic animal of claim 6.
13. An agent identified by the method of claim 10 or claim 11.
14. A transgenic mouse comprising a disruption in an FPR-RS4 gene, wherein there is no significant expression of the FPR-RS4 gene in the transgenic mouse.
15. A transgenic mouse comprising a homozygous disruption in an FPR-RS4 gene, wherein the transgenic mouse exhibits increased anxiety.
16. The transgenic mouse of claim 15, wherein the increased anxiety is characterized by decreased time spent in a central region of an open field test.
17. A transgenic mouse comprising a homozygous disruption in an FPR-RS4 gene, wherein the transgenic mouse exhibits impaired motor coordination or balance or ataxia.
18. The transgenic mouse of claim 17, wherein the transgenic mouse exhibits a decrease in performance on an accelerating rotarod.
19. The transgenic mouse of claim 18, wherein the transgenic mouse falls off the accelerating rotarod at a lower speed relative to a wild-type mouse.
20. A transgenic mouse comprising a homozygous disruption in an FPR-RS4 gene, wherein the transgenic mouse exhibits a decreased susceptibility to seizure.

21. The transgenic mouse of claim 20, wherein the mouse exhibits seizure-like responses at a higher dose of Metrazol, relative to a wild-type mouse.
22. A cell derived from the transgenic mouse of claim 14.
23. A method of identifying an agent that ameliorates a phenotype associated with a disruption in an FPR-RS4 gene, the method comprising:
 - (a) administering an agent to a transgenic mouse comprising a disruption in an FPR-RS4 gene; and
 - (b) determining whether the agent ameliorates at least one of the following phenotypes: increased anxiety, impaired motor coordination or balance, ataxia, or decreased susceptibility to seizure.
24. An agent identified by the method of claim 23.
25. An agonist or antagonist of FPR-RS4.
26. Phenotypic data associated with a transgenic mouse comprising a disruption in an FPR-RS4 gene, wherein the phenotypic data is in an electronic database.
27. A method of treating anxiety, the method comprising administering to a subject in need a therapeutically effective amount of FPR-RS4.
28. A method of treating impaired motor coordination, impaired balance, or ataxia, the method comprising administering to a subject in need a therapeutically effective amount of FPR-RS4.
29. A method of identifying an agent that ameliorates anxiety, the method comprising:
 - (a) administering an agent to the transgenic mouse of claim 15; and
 - (b) determining whether the agent has an affect on anxiety in the transgenic mouse.
30. A method of identifying an agent that ameliorates impaired motor coordination, impaired balance, or ataxia, the method comprising:
 - (a) administering an agent to the transgenic mouse of claim 17; and
 - (b) determining whether the agent has an affect on motor coordination, balance or ataxia in the transgenic mouse.
31. A method of evaluating treatments for anxiety, the method comprising:
 - (a) administering a therapeutic agent to the transgenic mouse of claim 15; and

- (b) determining the *in vivo* effects of the agent on anxiety level in the transgenic mouse..
32. A method of evaluating treatments for impaired motor coordination, impaired balance, or ataxia, the method comprising:
- (a) administering a therapeutic agent to the transgenic mouse of claim 17; and
 - (b) determining the *in vivo* effects of the agent on motor coordination, balance, or ataxia in the transgenic mouse.
33. A method of identifying an agent that inhibits the activity or function of FPR-RS4, the method comprising:
- (a) providing a cell expressing FPR-RS4;
 - (b) contacting the cell with an agent; and
 - (c) determining whether the agent inhibits the activity or function of FPR-RS4, wherein the agent has an affect on seizure susceptibility.
34. A transgenic mouse comprising a homozygous disruption in an FPR-RS4 gene, wherein the transgenic mouse exhibits a heart abnormality.
35. The transgenic mouse of claim 34, wherein the abnormality comprises an enlarged heart or increase in heart weight.
36. The transgenic mouse of claim 34 wherein the abnormality comprises an increase in heart to body weight ratio.
37. The transgenic mouse of claim 34, wherein the abnormality comprises myocardial fibrosis.
38. A method of identifying an agent that ameliorates a heart abnormality, the method comprising:
- (a) administering a putative agent to the transgenic mouse of claim 34; and
 - (b) determining whether the agent has an effect on a heart abnormality in the transgenic mouse.
39. A method of treating a heart abnormality, the method comprising administering to a subject in need a therapeutically effective amount of FPR-RS4.
40. A pharmaceutical composition comprising an FPR-RS4 protein.